Geocoder Accuracy Ranking

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Abstract. Finding an address on a map is sometimes tricky: the chosen map application may be unfamiliar with the enclosed region. There are several geocoders on the market, they have different databases and algorithms to compute the query. Consequently, the geocoding results differ in their quality. Fortunately the geocoders provide a rich set of metadata. The workflow described in this paper compares this metadata with the aim to find out which geocoder is offering the best-fitting coordinate for a given address.

Keywords: address, querying, geocoder, geocoding, yahoo maps, bing maps, google maps, open street maps, coordinate, accuracy, metadata, analysis, visualization, custom sib.

1 Introduction: Workflow Scenario

Geocoding describes the process of locating an address. Locating means to find the best-fitting coordinate for a given address. This is an important and basic function in many applications and can be used for example to search for an address on a map such as "August-Bebel-Strasse 89, 14482 Potsdam". Obviously, all navigation tools must geocode the target-address of a trip. But also the geomarketing industry needs to geocode entire datasets of customer addresses, for instance to calculate catchment area of supermarkets, banks or diners.

Geocoding-providers, here named *geocoders*, are the service-providers which receive the query-address, process the geocoding task and put out the result. The geocoder is the adapter between address and coordinate. All three objects are correlated in a simple functional manner:

$$coordinate_i = geocoder_i(address)$$

All geocoders offer the same function: geocoding. Except for the documentation of the service connection, each service provider itself is a black box. The service-provider hides there information about the volume and structure of the database and of course of the algorithm behind. The quality of the resulting coordinate is mainly influenced by the quality and quantity database of the geocoder and the query algorithm that uses these database. The geocoding-quality of each geocoder can vary from area to area, from country to country and of course from street to street, too.
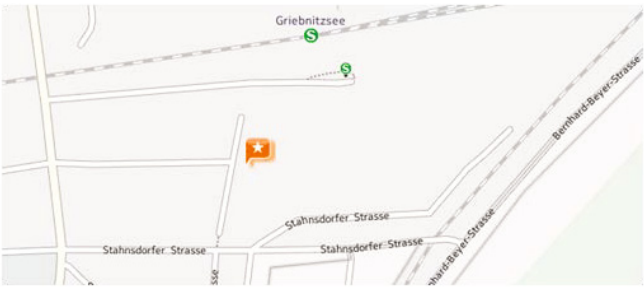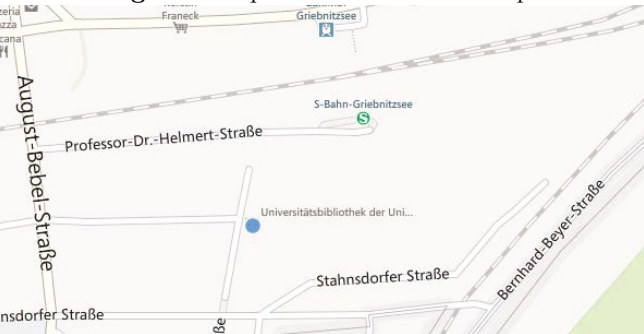
Fig. 1. Example address in Yahoo Maps

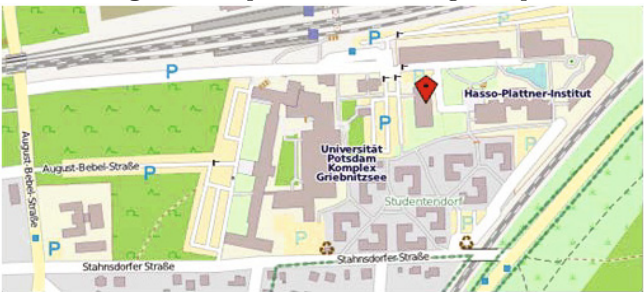**Fig. 2.** Example address in Bing Maps

Fig. 3. Example address in Google Maps

Fig. 4. Example address in Open Street Maps